Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 - 48. (Canceled)

49.   (New) An apparatus for performing area correlation on a first feature image and a second feature image, each feature image including a plurality of lines, the apparatus comprising:

one or more buffers capable of storing at least part of each feature image;

a window summation buffer; and

a processor capable of:

obtaining a line from each feature image;

computing a correlation of the two lines at a plurality of disparities; and

storing the results of the correlation in the window summation buffer.

50.   (New) The apparatus of claim 49, wherein the processor is further capable of using the information stored in the window summation buffer to compute a new line in a disparity image.

51.   (New) The apparatus of claim 50, wherein the processor is further capable of computing two minimum values from the information stored in the window summation buffer to perform a left/right consistency check.

52.   (New) The apparatus of claim 50, wherein the processor is further capable of computing fractional pixel disparities.

53.   (New) The apparatus of claim 49, wherein the processor is further capable of computing a confidence value.

54. (New) An apparatus for performing area correlation on a first and a second feature images using a first and a second correlation windows of size X pixels by Y lines, where Y is less than 10% of the total number of lines in either feature image, and X is less than 10% of the total number of pixels in a line of either feature image, the apparatus comprising:

a first buffer capable of storing more than Y but less than 3Y lines of the first feature image;

a second buffer capable of storing more than Y but less than 3Y lines of the second feature image;

a window summation buffer; and

a processor capable of:

correlating, at a plurality of disparities, corresponding lines in the first and the second correlation windows; and

storing the results of the correlation in the window summation buffer.

55. (New) The apparatus of claim 54, wherein the processor is further capable of using the information stored in the window summation buffer to compute a new line in a disparity image.

56. (New) The apparatus of claim 55, wherein the processor is further capable of computing two minimum values from the information stored in the window summation buffer to perform a left/right consistency check.

57. (New) The apparatus of claim 55, wherein the processor is further capable of computing fractional pixel disparities.

58. (New) The apparatus of claim 54, wherein the processor is further capable of computing a confidence value.

59. (New) A method for performing area correlation on a first feature image and a second feature image using a window summation buffer to cache partial results, each feature image including a plurality of lines, the method comprising the steps of:

obtaining a line from each feature image;

computing a correlation of the two lines at a plurality of disparities; and

storing the results of the computing in the window summation buffer.

60. (New) The method of claim 59, further comprising the step of using the information stored in the window summation buffer to compute a new line in a disparity image.

61.   (New) The method of claim 60, further comprising the step of computing two minimum values from the information stored in the window summation buffer to perform a left/right consistency check.

62.   (New) The method of claim 60, further comprising the step of computing fractional pixel disparities.

63.   (New) The method of claim 59, further comprising the step of computing a confidence value.

64.   (New) A method for performing area correlation on a first and a second feature images using a first and a second correlation windows of size X pixels by Y lines, where Y is less than 10% of the total number of lines in a feature image, and X is less than 10% of the total number of pixels in a line of a feature image, the method comprising the steps of:
        storing more than Y but less than 3Y consecutive lines of the first feature image in a first buffer;
        storing more than Y but less than 3Y consecutive lines of the second feature image in a second buffer;
        correlating, at a plurality of disparities, corresponding lines in the first and the second correlation windows; and
        storing the results of the correlating in a window summation buffer.

65.   (New) The method of claim 64 further comprising the step of using the information stored in the window summation buffer to compute a new line in a disparity image.

66.   (New) The method of claim 65 further comprising the step of computing two minimum values from the information stored in the window summation buffer to perform a left/right consistency check.

67.   (New) The method of claim 65, further comprising the step of computing fractional pixel disparities.

68.   (New) The method of claim 64, further comprising the step of computing a confidence value.